DOCUMENT RESUME

ED 255 891 CS 008 006

AUTHOR Harlin, Rebecca P.
TITLE What Do Prereaders Know about Print?
PUB DATE 8 Nov 84
NOTE 19p.; Paper presented at the Annual Conference of the New York State Reading Association (18th, Kiamesha Lake, NY, November 6-11, 1984).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Aptitude; Cognitive Processes; Developmental Stages; Educationally Disadvantaged; Evaluation Methods; Primary Education; *Reading Achievement; *Reading Diagnosis; *Reading Readiness; *Reading Research; Remedial Reading; *Test Validity
IDENTIFIERS Concepts about Print Test; *Print Awareness

ABSTRACT

A study explored the relationship between print awareness and subsequent reading achievement in children. Specifically it measured changes in the development of print awareness across age and grade levels and across time, and compared the levels of lower-ability, educationally disadvantaged children in second and third grades to that of their predecessors in kindergarten and first grade. The 126 subjects included children from kindergarten and first grade, and Title I second and third grade students. Students' performance on reading readiness, reading achievement, and print awareness measures was evaluated. Test results indicated that older subjects demonstrated greater print awareness than the younger subjects, and that print awareness increased by age and by grade level of the subject, although the change was not equal for all grades. There was a moderately strong, positive relationship between the level of print awareness and the level of reading readiness. The "Concepts about Print Test, Sand," proved to be an adequate predictor of reading achievement. This measure's ease of administration should recommend its use in the classroom as well as the reading clinic. (HTH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy

ED255891

What Do Prereaders Know About Print?

Rebecca P. Harlin, Ph.D.

Department of Elementary and Secondary Education and Reading

State University College

Geneseo, NY 14454

New York State Reading Conference

Kiamesha Lake, New York

November 8, 1984

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Rebecca P. Harlin

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CS008006

Running head: PRINT AWARENESS

What Do Prereaders Know About Print?

What do prereaders know about written language? In the past, it was believed that young children had little, if any, understanding of print and how it functions. Their ability to understand the concept of word and to differentiate word boundaries appeared to be negligible (Downing, 1967; Holden & MacGinitie, 1972; Reid, 1966). It was also believed that most young children lacked a clear understanding of what the reading act entails since they were unable to describe the process to an interviewer (G. Mason, 1967; Oliver, 1975; Weintraub & Denny, 1962). However, it was this narrow focus on one aspect of literacy development and small sampling as well as the use of abstract tasks to assess print awareness which resulted in many researchers' and teachers' underestimating young children's abilities.

In contrast, recent research suggests that children know a great deal about written language at an early age (J. Mason, 1980). It is from broader-based studies that we more fully understand the development of print awareness in young children. Through careful observation as well as the use of concrete tasks, the strategies young children employ when interacting with print have become apparent (Hiebert, 1981).

Perhaps the most important research in the area of print awareness was done by Clay (1969). Her work was an improvement over the earlier studies in methodology, sampling, length of observation time, and implications. In her year-long study of 100 five-year-olds in New Zealand, samples of reading-like behavior were taken weekly. During the prereading phase, the children passed through several stages while trying to find print to match their oral responses. Their book orientation behavior which began as page matching, lead to line matching and later to reading the spaces. From this study,

Clay developed the Concepts About Print Test, Sand, in 1972. Similar results were obtained by Söderbergh's (1977) long-term observations of her two-year-old daughter's reading development. She also found evidence of the development of book-orientation behavior-print directionality, voice-print match, search-and-check behavior, and self-correction. Thus, by observing children involved in direct experiences with written language, more accurate perceptions of their print awareness strategies were obtained.

In later studies, a developmental trend in young children's ability to locate and map print was substantiated (Holdaway, 1979; Morris, 1983). The key to obtaining the data was the use of concrete tasks in which the children were exposed to print and directed to show, not explain, what they know about print direction, concept of word boundaries, and speech-print match. Their understanding of the spoken word-written word match as well as other aspects of print awareness has been documented as essential to prereaders' subsequent reading development (Ehri, 1979; Henderson, 1980).

This study was concerned with the relationship of print awareness to subsequent reading achievement. The following question was raised: (1) Is there a difference in the development of print awareness, (a) among age levels, (b) among grade levels, (c) between prereaders and readers? (2) Does the level of print awareness estimate the level of reading readiness? (3) Does the level of print awareness estimate the level of reading achievement? Thus, the major focus was on measuring the changes in the development of print awareness across age and grade levels as well as time. It was also the intent of this study to compare the levels of print awareness in lower-ability, educationally disadvantaged children in second and third grades to that of their predecessors in kindergarten and first grade.

Method

The Sample

All participants in the study were selected from an urban school whose population consisted of lower and middle class children. For the purposes of the study, 126 subjects from primary grade classrooms were chosen--two classes of kindergarteners, two classes of first graders, and all Title I second and third grade students. Selection of kindergarten and first grade students involved intact classrooms which provided a balance in that sample of race, sex, and ability level since the students were administratively assigned to heterogeneous classrooms. All Title I subjects were selected on the basis of the school district's selection criterion, a score at or below the 40th percentile on either the comprehension subtest or the total reading test of the Comprehensive Tests of Basic Skills. Thus, within the five second and third grade classrooms, all students who met this criterion became Title I target students and were included in the study.

The Instruments and Data Collection

Four instruments were used to evaluate the performance of the subjects on several variables--reading readiness, reading achievement, and print awareness. These instruments included the Metropolitan Readiness Tests, Level I, Form Q and Level II, Form P; the Metropolitan Achievement Tests, Primary I, Form H, and Primary II, Form H; the Comprehensive Tests of Basic Skills, Level B, Form S, Level C, Form S, and Level I, Form S; and the Concepts About Print Test, Sand.

In September, the Concepts About Print Test, Sand, was administered individually to each first, second, and third grade subject by the researcher. Testing took place in an empty classroom with only the researcher and the

subject present. At the beginning of the session, the storybook, Sand, was introduced to the child. It was explained that the researcher would read the book and ask the child questions throughout the story. Following the procedures outlined in Clay's The Early Detection of Reading Difficulties, the 24-item checklist was given. Scoring for each item was completed as the child responded. Points were awarded on the basis of one point for a correct response and zero for an incorrect or no response. No partial credit for any item was given. Total points were added for each subject to determine the raw score. No feedback was given to the child concerning the appropriateness of his/her responses. In January, all kindergarten subjects were tested by following the same procedure and testing conditions. In late March and April, all first grade and Title I second and third grade subjects were retested following the same procedure.

For the first grade subjects, the Metropolitan Reading Readiness Tests, Level II, Form P were administered and scored by their classroom teachers during the second week of school in September. In January, the kindergarten students were given the MRT, Level I, Form Q, by their classroom teacher who also scored the tests. Results of both batteries were used as a standardized indicator of reading readiness.

For the Chapter I subjects, the appropriate level of the Metropolitan Achievement Tests, Form H was administered by the researcher and another Chapter I teacher. Since this test was being used to evaluate student progress in the Chapter I program, students were given a test one level lower than their current grade placement--Primary I was administered to the second graders; Primary II to the third graders. Students were tested during the district pre-

and post-testing periods in September and April.

All first, second, and third grade subjects, along with their peers, were given the Comprehensive Tests of Basic Skills, Form S, by their classroom teachers. Subjects were tested in groups of 15 during the district week-long testing period. The third grade subjects who received Level I were tested in late March. In mid-April, the first graders were given Level B, while the second graders received Level C. All test booklets were machine-scored. Test results for each subject were obtained from the school printout.

Results

Relationship of Print Awareness to Age and Grade Level

A simple linear regression of the Sand scores on age (in months) was computed. The estimated regression slope was equal to 0.305 with a standard error of 0.026. A significant linear relationship exists between scores on the Sand and age ($F = 129.6$, $p < 0.001$). Thus, the older subjects demonstrated greater print awareness than the younger subjects.

Using a one-way analysis of variance, the means for each group on the Sand were compared. The average scores on the Sand were found to be significantly different ($F = 63.40$, $p < 0.001$) among the grade levels studied. The scores on print awareness increased both by age and grade level of the subject.

Insert Table 1 about here

However, the change in level of print awareness was not found to be equal for all grades. When the mean gain scores for the first graders and Title I second and third graders on the Sand (fall and spring administrations)

were compared using an ANOVA, there were significant differences among grade levels ($F = 38.64$, $p < 0.01$). The mean of the first grade gain scores was significantly higher than that of both Chapter I groups, indicating a greater increase in print awareness over time. To compare the level of print awareness of prereaders with that of readers, a confidence interval for the difference in the average means of the non-Chapter I students with those of the Chapter I students was constructed. Using the Bonferroni procedure, the value for the estimate of the difference was found to be -10.03. A 95 percent confidence interval for the population parameter yielded a difference in the level of print awareness between the prereaders (non-Chapter I) and the readers (Chapter I). The average level of print awareness was greater for the readers.

Insert Table 2 about here

Relationship of Print Awareness to Reading Readiness

To determine the relationship between print awareness and reading readiness, the scores on the Sand were compared to the pre-reading composite scores on the Metropolitan Readiness Tests using a Pearson-product-moment correlation. The Sand was found to have a significant correlation with both kindergarten and first grade levels of the MRT (0.616, $p < 0.001$); however, a stronger correlation was found for the first grade test (0.767, $p < 0.001$) than for the kindergarten test (0.508, $p < 0.01$). Thus, there was a moderately strong, positive relationship between the level of print awareness and the level of reading readiness.

Insert Table 3 about here

A factor analysis was used to make an accurate identification of those factors or subscales of print awareness. The 24 items of the Sand were regarded as variables. The factor pattern coefficients resulting from the oblique rotation yielded two factors, or subscales. While most items had loadings approaching or exceeding .40, four items did not. However, Items 1 and 8 which had loadings of .26 and .27, respectively, appear to load on Factor One. Support for the inclusion of Items 1 and 8 with those loading on Factor One is supported through a reliability analysis of the subscale (the overall alpha is reported to be 0.884). Items 18 and 21 do not load on either factor.

Using Pearson-product-moment correlation, the relationship of the readiness subscale, Factor One, to the reading readiness measure, the MRT, was determined. Factor One, composed of items relating to directional print behavior and book orientation, was found to have a significant relationship (0.516, $p < 0.01$) to the pre-reading composite score on the MRT. Thus, the predictive, diagnostic value of the readiness subscale approaches that for the entire Sand, making those particular items of interest to kindergarten teachers.

Relationship of Print Awareness to Reading Achievement

Does the level of print awareness estimate the level of reading achievement? Through two different analyses, the answer to this question was found. Using the Pearson-product-moment correlation, the coefficient for the fall administration of the Sand with the CTBS was 0.686 for all Chapter I subjects; and 0.525 for the spring administration of the Sand. Both correlations

were significant at the 0.01 and 0.05 levels. The coefficient for the fall Sand with the MAT was 0.660, while that for the spring Sand was 0.638 for the Chapter I subjects. Again, both were statistically significant at the 0.01 and 0.05 levels.

When the Pearson-product-moment correlations were calculated for each grade level for the fall Sand and the CTBS, the following coefficients resulted--first grade 0.803; second grade Chapter I, 0.570; third grade Chapter I, 0.797, and overall correlation 0.67. All were statistically significant at the 0.05 level, with those for the first and third grade Chapter I students also significant at the 0.01 level. For the MAT, the grade level coefficients were 0.612 for the fall Sand and Primary I (second grade); 0.515 for the spring Sand and Primary I; 0.523 for the fall Sand and Primary II; 0.672 for the spring Sand and Primary II (third grade). All correlation coefficients were significant at the 0.05 level. Thus, for the first and third grade subjects, the fall administration of the Sand was more highly correlated with scores on the grade level reading achievement test, the CTBS, Levels B and I, respectively, than for the second grade subjects who received Level C. For the Chapter I subjects, the fall Sand had a higher correlation with the second grade test MAT Primary I (the out-of-level measure of reading achievement) than for the third grade test, Primary II. When the data for the Chapter I subjects' fall administration of the Sand were combined with those of the MAT and CTBS in a linear regression analyses, both achievement measures followed a positive linear trend with the Sand.

Insert Table 4 about here

From factor analysis, a second factor, or subscale, was identified. All items have loadings approaching or exceeding .40. Items 6, 15, and 20 which had double loadings on Factors One and Two are included on Factor Two. Through reliability analysis, it was found that their inclusion did not reduce the reliability coefficient of the second subscale (the overall alpha was reported to be 0.875).

Using Pearson-product-moment correlations, the relationship of the second subscale to the reading achievement measure, the CTBS was determined. Factor Two, consisting of items relating to word and line order as well as punctuation, was found to have a strong correlation with the CTBS (0.682, $p < 0.01$). Thus, the subscale, Factor Two, has a stronger association with reading achievement than the full 24-item Sand. This cluster of items, therefore, may be of particular interest to reading teachers.

Conclusions and Implications

Upon examination of the study's results, it was learned that the Concepts About Print Test, Sand, was an effective predictor of reading achievement for subjects older than those in previous studies (Day & Day, 1979; Johns, 1980). The Sand was also demonstrated to correlate highly with a widely accepted reading readiness measure, the Metropolitan Readiness Tests. Furthermore, the correlation of the Sand with the MAT, Primary I for the Chapter I second graders, 0.61, approached that of the MRT with the MAT, 0.70. The significant correlations of the Sand with the CTBS further demonstrated its effectiveness as a predictor of reading achievement. Therefore, these results support the use of the Sand for young children from kindergarten through third grade, and especially for disabled readers like the Chapter I

subjects.

For teachers of primary grade children, as well as reading clinicians, the Sand has been shown to be an effective indication of the child's knowledge and understanding of print concepts. Its ease of administration should recommend its use in the classroom as well as the reading clinic. The close correlation found between the Sand and the grade level measure of reading achievement, the CTBS, demonstrated the Sand's predictive qualities. As part of preventative strategy, the Sand may be used to identify potential reading failure early in the school year, thus facilitating intervention strategies. For the reading clinician, the appropriateness of the Sand as a diagnostic tool for young disabled readers has been shown.

Insert Table 5 about here

For teachers and clinicians to appreciate the nature of prereaders' print awareness, it is useful to organize the Sand items according to another factor analysis (Day & Day, 1980a). The children's responses may be organized developmentally by four concepts--book orientation, print-direction, letter-word, and advanced print. When one examines the data in this way, it is possible to trace the print concepts that precede and parallel the development of reading behavior. A substantial percentage of the prereaders, the kindergarten and first grade children, have demonstrated that they have acquired the most basic concepts that precede reading behavior--book orientation and print-direction. Similarly, the use of the concrete task, the Sand, enabled them to also demonstrate their understanding of the concepts of letter and word. Thus, many prereaders arrive at school already possessing important foundational knowledge about written language.

While one would not expect prereaders to have acquired the advanced-print concepts associated with reading, one would expect that readers understand the prereading concepts related to print direction and letter-word as well as the advanced print concepts. From the data it is evident that not all readers have acquired these concepts as they have encountered print. Although they have had one, two, and in some cases, three years of reading instruction, their confusion over letter-word and print direction concepts continues. One explanation for their performance may be that none of these concepts was directly taught or consistently mentioned by their teachers. Not only are some Chapter I students still confused about the concepts of letter and word, but also about the extralinguistic cues of print--commas, question marks, and quotation marks which contribute to the meaning of a text. Thus, the importance of assessing lower achievers' print awareness may be important to planning remedial instruction which focuses on acquisition of these concepts.

According to one theory of linguistic awareness, there is an interaction of reading acquisition and print awareness. As children learn to read, they become more sensitized to print (Ehri, 1979; Ryan, McNamara & Kenney, 1977). The data from this study indicated that there was an increase in print awareness between readers and prereaders. Furthermore, it was shown that as the first graders were exposed to reading instruction, their print awareness increased significantly. While there were no stages defined by the data, it was shown that print awareness had a positive linear relationship with age and grade level. The increase of print awareness by first graders may lend support to the interactive theory of reading acquisition and print awareness.

References

Clay, M. M. (1968). Reading errors and self-correction behavior. British Journal of Educational Psychology, 39, 47-56.

Day, H. D., & Day, K. C. (1979). Some relationships among the Record of Oral Language, the Concepts about Print, and the Metropolitan Readiness Test. Paper presented at the Conference on Linguistic Awareness of the International Reading Association, Victoria, British Columbia.

Day, H. D., & Day, K. C. (1980). Item and factor analysis of the Concepts about Print test: Patterns in the Sand. Unpublished paper. (Available from Department of Psychology and Philosophy, Texas Woman's University, Denton, TX.)

Downing, J. (1969). Children's concepts of language in learning to read. Educational Research, 12, 106-112.

Ehri, L. C. (1979). Linguistic insight: Threshold of reading acquisition. In T. Waller & G. E. MacKinnon (Eds.), Reading research: Advances and theory and practice (Vol. 1). New York: Academic Press.

Henderson, E. H. (1980). Developmental concepts of word. In E. H. Henderson & J. W. Beers (Eds.), Developmental and cognitive aspects of learning to spell: A reflection of word knowledge. Newark, DE: International Reading Association.

Hiebert, E. H. (1981). Developmental patterns and interrelationships of preschool children's print awareness. Reading Research Quarterly, 16, 236-260.

Holdaway, D. (1979). The foundations of literacy. Exeter, NH: Heinemann.

Holden, M. H., & MacGinitie, W. H. (1972). Children's conceptions of word boundaries in speech and print. Journal of Educational Psychology, 63, 551-557.

Johns, J. L. (1980). First graders' concepts about print. Reading Research Quarterly, 15, 529-549.

Mason, G. (1967). Preschoolers' concepts of reading. The Reading Teacher, 21, 130-132.

Mason, J. M. (1980). When do children begin to read: An exploration of four year old children's letter and word reading competencies. Reading Research Quarterly, 15, 203-226.

Morris, D. (1983). Concept of word and phoneme awareness in the beginning reader. Research in the Teaching of English, 17, 359-373.

Oliver, M. E. (1975). The development of language concepts of pre-primary Indian children. Language Arts, 52, 865-869.

Reid, J. F. (1966). Learning to think about reading. Educational Research, 9, 56-62.

Ryan, E. B., McNamara, S. R., & Kenney, M. (1977). Linguistic awareness and reading performance among beginning readers. Journal of Reading Behavior, 9, 399-400.

Söderbergh, R. (1977). Reading in early childhood: A linguistic study of a preschool child's gradual acquisition of reading ability. Washington, DC: Georgetown University Press.

Weintraub, S., & Denny, T. P. (1965). What do beginning first graders say about reading? Childhood Education, 41, 326-327.

TABLE 1

MEANS FOR THE FIRST ADMINISTRATION

OF THE SAND BY GRADE

Grade	N	Mean	Standard Deviation
Kdgn	32	7.60	3.61
First	34	8.94	5.23
Second Chapter I	30	16.66	3.27
Third Chapter I	30	20.00	3.18

TABLE 2

AVERAGE GAIN IN TOTAL SCORE ON SAND

FROM FALL TO SPRING ADMINISTRATION

Grade	N	Mean Gain	Standard Deviation
First	29	9.07	3.95
Second Chapter I	27	2.33	2.62
Third Chapter I	30	2.21	2.10

Table 3

Factor One Readiness Scale (α=.8444)

Percentage of Children Who Responded Correctly

Item	Description	Loading	Age Expectation (years)	Prereaders K	Prereaders 1st	Readers 2nd	Readers 3rd
1	Front of book	0.260	5.6	94%	88%	100%	95%
2	Print contains message	0.671	5.0	69	59	100	100
3	Where to start	0.834	5.6	59	50	100	100
4	Which way to go (l→r)	0.801	5.6	56	79	100	100
5	Return sweep to left	0.863	5.6	47	65	88	95
7	First and last concept	0.673	5.6	53	65	79	100
8	Bottom of picture	0.277	5.6	84	76	100	100
9	Print is upside down	0.535	5.6	19	35	79	95
11	Left page read first	0.479	5.6	66	82	96	100
16	Meaning of period	0.452	7.0	9	12	83	100
19	Locate M-m, H-h	0.520	6.0	44	32	100	89
22	Show one word, two words	0.503	6.0	34	44	81	100
24	Capital letters	0.338	6.6	25	32	93	92

Table 4

Factor Two Reading Scale (α = .875)

Item	Description	Loading	Age Expectation (years)	Prereaders K	Prereaders 1st	Readers 2nd	Readers 3rd
6	Word by word matching	0.393	5.6	16	21	88	90
10	Line order altered	0.485	5.6	0	6	33	67
12	One change in word order	0.781	6.6	3	12	33	62
13	One change in letter order	0.827	6.6	3	9	13	48
14	One change in letter order	0.852	7.0	0	3	4	62
15	Meaning of ?	0.379	6.6	9	12	83	100
17	Meaning of comma	0.514	7.0	0	3	13	52
20	Reversible words was & no	0.401	6.0	0	6	75	86
23	First and last letter of word	0.402	6.6	16	56	55	92

Table 5

Developmental Concepts of Sand

Percentage of Children Who Correctly Responded

		Prereaders		Readers	
Item	Description	Kindergarten	1st Grade	2nd Chapter I	3rd Chapter I
	Book Orientation Concepts				
1	Front of book	94%	88%	100%	95%
2	Print contains message	69%	59%	100%	100%
11	Left page read before right	66%	82%	96%	100%
	Print Direction Concepts				
3	Where to start	59	50	100	100
4	Which way to go (l→r)	56	79	100	100
5	Return sweep to left	47	65	88	95
6	Word by word matching	16	21	88	90
7	First and last concept	53	65	79	100
9	Mapping inverted print	19	35	79	95
16	Meaning of period	9	12	83	100
	Letter-Word Concepts				
8	Bottom of picture	84	76	100	100
19	Locate M-m H-h	44	32	100	89
21	Show one letter, two letters	69	62	42	81
22	Show one word, two words	34	44	81	100
23	First and last letter of word	16	56	55	92
24	Capital letters	25	32	93	92
	Advanced Print Concepts				
10	Line order altered	0	6	33	67
12	One change in word order	3	12	33	62
13	One change in letter order	3	9	13	48
14	One change in letter order	0	3	4	62
15	Meaning of question mark	9	12	83	100
17	Meaning of comma	0	3	13	52
18	Meaning of quotation mark	0	0	4	0
20	Reversible words was, no	0	6	75	86